



## 1. CHEMICAL PRODUCT/COMPANY IDENTIFICATION

**Name:** MS-757  
Vertrel SMT  
Heavy Duty Solvent & Flux Remover

**Product Use:** Cleaning Solvent & Flux Remover  
for electronic assemblies.

### MANUFACTURER/DISTRIBUTOR:

Miller-Stephenson Chemical  
55 Backus Ave.  
Danbury, Conn. 06810 USA  
(203) 743-4447

**Emergency Phone Number:**  
(800) 424-9300

## 2. HAZARDS IDENTIFICATION

### Hazard classification

Acute toxicity (Oral): Category 4  
Serious Eye Damage/Irritation: Category 2B.  
Specific Target Organ Toxicity (single exposure): Category 1  
Specific Target Organ Toxicity (single exposure): Category 3

### Label elements:

**Signal word**  
Danger

### Pictograms



### Hazard Statements

Harmful if swallowed.  
Causes eye irritation.  
May cause respiratory irritation.  
May cause drowsiness or dizziness.  
Causes damage to organs (Central nervous system, Eyes)

### **Precautionary Statements**

Avoid breathing dust/fume/gas/mist/vapors/spray.

Wash skin thoroughly after handling.

Do not eat, drink, or smoke when using this product.

Use in a well-ventilated area.

IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

IF exposed: Call a POISON CENTER or doctor/ physician.

Rinse mouth.

If eye irritation persists: Get medical advice/ attention.

Store in a well-ventilated place. Keep container tightly closed.

Dispose of contents/ container to an approved waste disposal plant.

### **Other Hazards**

Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing. Prolonged skin contact may defat the skin and produce dermatitis. Effects of breathing high concentrations of vapor may include: May cause cardiac arrhythmia. Misuse or intentional inhalation abuse may lead to death without warning.

### **3. INGREDIENTS**

<u>Material (s)</u>	<u>CAS No.</u>	<u>Approximate %</u>
1,1,1,2,2,3,4,5,5,5-Decafluoropentane(HFC-43-10mee)	138495-42-8	49 -55
Trans,1,2-Dichloroethylene	156-60-5	40 - 46
Methanol	67-56-1	2 - 6
Nitromethane	75-52-5	0.05 – 0.7

### **4. FIRST AID MEASURES**

**Inhalation:** Remove patient to fresh air, lie down. Keep patient warm and at rest. If not breathing, give artificial respiration. Give oxygen as necessary, if qualified personnel is available. Get medical attention if necessary.

**Eye:** Flush with large amounts of water for at least 15 minutes, lifting eyelids until no evidence of the chemical remains. Get medical attention. Remove contact lenses, if present and easy to do. Continue to rinse.

**Skin:** Wash skin with warm water after contact. Wash contaminated clothing before use. Get medical attention if necessary.

**Oral:** Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Give 2 glasses of water. If vomiting occurs, lean victim forward to reduce the risk of aspiration. Call a physician.

**Most important symptoms/effects, acute and delayed:** Dizziness

**Notes to Physician:** Do not give adrenaline or similar drugs.

## 5. FIRE FIGHTING MEASURES

**Flammability:** This product is not flammable. Does not flash using ASTM D 56.

**Suitable Extinguishing Media:** Water spray, Water mist, Dry chemical, Carbon dioxide (CO<sub>2</sub>)

**Unsuitable extinguishing media:** No applicable data available.

**Special hazards:** Fire or intense heat may cause violent rupture of packages. The product is not flammable. Vapors may form flammable mixture with air. Hazardous combustion products: Hydrogen fluoride Fluorinated hydrocarbons Carbonyl fluoride Carbon oxides Hydrogen chloride

**Special Fire Fighting Instruction:** In the event of fire, wear self-contained breathing apparatus. Use personal protective equipment. Wear neoprene gloves during cleaning up work after a fire. Exposure to decomposition products may be a hazard to health.

**Further information:** Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Evacuate personnel to safe areas. Cool containers/tanks with water spray. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

## 6. ACCIDENTAL RELEASE MEASURES

**Safeguards (Personnel):** Evacuate personnel to safe area. Ventilate area, especially low or enclosed places where heavy vapors might collect. In case of insufficient ventilation, wear suitable respiratory equipment.

**Environmental precautions:** If containers rupture, prevent material from entering sewers, waterways, or low areas. Should not be released into the environment. Do not allow contact with soil, surface or ground water.

**Spill Cleanup:** Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations

## 7. HANDLING AND STORAGE

**Handling:** Use in a well-ventilated area to avoid breathing vapors. Vapors are heavier than air and accumulate in low areas. Use only with adequate ventilation. Use appropriate respiratory protection when ventilations is inadequate. When using do not eat, drink, or smoke. Avoid contact with skin, eyes or clothing. Wash thoroughly after handling.

**Storage Conditions:** Store tightly sealed in a clean, dry place, and well ventilated place. Do not store in temperatures that exceed 125°F/52°C, because the containers could leak or rupture from pressure and expansion. Protect from freezing temperatures. If solvent is stored below -10°C (14°F), mix prior to use.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<u>Exposure Limits:</u>	<u>TLV (ACGIH)</u>	<u>PEL (OSHA)</u>	<u>AEL (DuPont)</u>
1,1,1,2,2,3,4,5,5,5-Decafluoropentane	Not Established	Not Established	200 ppm, 8 & 12 Hr. TWA 400 ppm, Ceiling
Trans,1,2-Dichloroethylene	200 ppm, TWA	200 ppm, 8 Hr. TWA	200 ppm, 8 & 12 Hr. TWA
Methanol	200 ppm, TWA	200 ppm, 8 Hr. TWA	200 ppm, 8 & 12 Hr. TWA, Skin
Nitromethane	20 ppm, TWA	100 ppm, 8 Hr. TWA	10 ppm, 8 & 12 Hr. TWA

\* AEL is DuPont's Acceptable Exposure Limit. Where governmentally imposed occupational exposure limits which is lower than the AEL are in effect, such limits shall take precedence.

**Respiratory Protection:** Avoid breathing vapors, mists or spray. Use with sufficient ventilation especially for enclosed or low places. Vapors are heavier than air and can cause suffocation by reducing oxygen. In poorly ventilated areas, use an approved self-contained breathing apparatus.

**Eye Protection:** Avoid eye contact. Use chemical goggles or safety glasses with side shields.

**Skin Protection:** Avoid contact with skin. Use gloves impervious to this material when prolonged or frequently repeated contact occurs.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Boiling Point:** 99°F/37°C

**Percent Volatile by Volume:** 100

**Density:** 1.37 g/cc @ 77°F/25°C

**Vapor Pressure:** 485 mmHg @ 77°F/25°C

**Vapor Density (Air=1):** 4.4

**Solubility in H<sub>2</sub>O:** 3.4 g/l @ 77°F/25°C

**pH Information:** Neutral

**Evaporation Rate (CC14=1):** N.A.

**Form:** Liquid

**Appearance:** Clear & Colorless

**Color:** Colorless

**Odor:** Ether-like

## 10. STABILITY AND REACTIVITY

**Stability:** Stable at normal temperatures and storage conditions.

**Chemical stability:** Product is chemically stable. No decomposition if stored and applied as directed.

**Possibility of hazardous reactions:** No applicable data available.

**Material and Conditions to Avoid:** Open flames and high temperatures. Alkali or alkaline earth metals. Powder metals. Powdered metal salts, Nitrogen oxides (NO<sub>x</sub>), Acids, bases and strong oxidizing agents, Oxygen.

**Decomposition:** This product can be decomposed by high temperatures (flame, glowing metal surfaces, etc.) forming Fluorinated hydrocarbons, Hydrogen fluoride, Carbon dioxide, Carbon monoxide, Hydrogen chloride gas, Carbonyl fluoride.

## 11. TOXICOLOGICAL INFORMATION

### Animal Data

#### 1,1,1,2,2,3,4,5,5,5-Decafluoropentane (HFC-43-10mee)

**Inhalation:** 4 hour LC50: 114mg/l in rats, Central nervous system effects, Convulsions

**Oral:** LD50: > 5,000 mg/kg in rats

**Dermal:** LD50: > 5,000 mg/kg in rabbits

**Skin Irritation:** No skin irritation, rabbit

**Eye Irritation:** No eye irritation, rabbit

**Skin Sensitization:** Did not cause sensitization on laboratory animals., guinea pig

**Repeated dose toxicity:** Inhalation, rat

No toxicologically significant effects were found.

**Mutagenicity:** Animal testing showed no mutagenic effects.

**Reproductive toxicity:** Animal testing showed no reproductive toxicity.

**Teratogenicity:** Animal testing showed no developmental toxicity.

#### Trans-1,2-Dichloroethylene

**Oral:** LD50: 7902 mg/kg in rats

**Dermal:** LD50: > 5,000 mg/kg in rabbits

**Inhalation:** 4 hour LC50: 95.4 mg/l in rats

**Target Organs:** Central nervous system, narcosis

**Skin irritation:** Mild skin irritation in rabbits

**Eye irritation:** Mild eye irritation in rabbits

**Repeated dose toxicity:** Inhalation, 90 days in rats: No toxicologically significant effects were found.

Oral, 90 days in rats: No toxicologically significant effects were found.

**Mutagenicity:** Did not cause genetic damage in animals.

Test on bacterial or mammalian cell cultures did not show mutagenic effects.

**Reproductive toxicity:** Animal testing showed no reproductive toxicity.

**Teratogenicity:** Animal testing showed no developmental toxicity.

## Methanol

**Inhalation Acute toxicity:** 3mg/l, animals (unspecified species)

Target Organs: Central nervous system, Eye, Central nervous system effects, narcosis, eye effects.

**Dermal Acute toxicity:** 300 mg/kg in rabbits (unspecified species)

Target Organs: Central nervous system, Eye, Central nervous system effects, narcosis, eye effects.

**Oral Acute Toxicity:** 100 mg/kg, animals (unspecified species)

Target Organs: Central nervous system, Eye, Central nervous system effects: narcosis, eye effects

**Skin irritation:** Slight or no irritation, Rabbit

**Eye irritation:** Slight irritation, Rabbit

**Skin sensitization:** Did not cause sensitization on laboratory animals, Guinea pig

**Carcinogenicity:** Not classifiable as a human carcinogen. Overall weight evidence indicates that the substance is not carcinogenic.

**Mutagenicity:** Animal testing did not show any mutagenic effects.

Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

Overall weight of evidence indicates that the substance is not mutagenic.

Did not cause genetic damage in animals.

Genetic damage in cultured mammalian cells was observed in some laboratory tests but not in others.

Genetic damage in cultured bacterial cells was observed in some laboratory tests but not in others.

**Reproductive Toxicity:** No toxicity or reproduction. Evidence suggests the substance is not a reproductive toxin in animals.

**Teratogenicity:** Evidence suggests the substance is not a developmental toxin in animals.

## Nitromethane

**Dermal:** LD50: > 2,000 mg/kg , rabbit

**Oral:** LD50: 1,210 mg/kg , rat

**Inhalation:** 4 h Acute toxicity (estimate): 14.9 mg/l , rat

**Target Organs:** Respiratory system, Central nervous system

Vapor: Respiratory effects, Bloody nasal discharge, Central nervous system effects, Lethargy, Convulsions

**Skin irritation:** No skin irritation, rabbit

**Eye irritation:** Mild eye irritation, rabbit

**Skin sensitization:** Does not cause skin sensitisation., multiple species

**Repeated dose toxicity:** Inhalation., multiple species

**Target Organs:** Blood, Thyroid, Respiratory system, altered hematology, altered blood chemistry, Thyroid effects, Respiratory effects

**Carcinogenicity:** Suspected human carcinogens.

**Mutagenicity:** Animal testing did not show any mutagenic effects.

Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

**Reproductive toxicity:** Suspected human reproductive toxicant.

Experiments have shown reproductive toxicity effects in male and female laboratory animals.

Abnormal sperm. Abnormal oestrus cycle.

## 12. ECOLOGICAL INFORMATION

### **Aquatic Toxicity:**

#### **HFC-43-10mee:**

96 hour LC50 in fathead minnows: 27.2 mg/l  
96 hour LC50 in rainbow trout: 13.9 mg/l  
48 hour LC50 in Daphnia magna: 11.7 mg/l  
72 hour EC50 in green algae: > 120 mg/l

#### **Trans-1,2-Dichloroethylene**

96 hour LC50 in bluegill sunfish: 74 mg/l  
48 hour LC50 in Daphnia magna: 79 mg/l  
96 hour EC50 in green algae: 798 mg/l

#### **Methanol**

96 hour LC50 – Flathead minnow: 28,100 mg/l  
48 hour EC50 – Daphnia (water flea): > 10,000 mg/l  
96 hour LC50 – Green algae (Selenastrum carpicornutum): 22,000 mg/l

#### **Nitromethane:**

96 hour LC50 in fathead minnows: 1710 mg/L  
48 hour LC50 in Daphnia magna (green algae): 100 mg/L  
72 hour EC50 in green algae: 36 mg/L

## 13. DISPOSAL CONSIDERATIONS

If recycling is not practicable, dispose of in compliance with local regulations. Remove to a permitted waste disposal facility. The product should not be allowed to enter drains, water courses or the soil.

## 14. TRANSPORT INFORMATION

### **U.S. DOT**

Not Regulated

### **IATA**

Not Regulated

### **IMDG**

Not Regulated

## 15. REGULATORY INFORMATION

### U.S. Federal Regulations

**TSCA:** All ingredients are listed in TSCA inventory.

1,1,1,2,2,3,4,5,5,5-DECAFLUOROPENTANE (CAS# 138495-42-8) is controlled by TSCA Section 5, Significant New Use Rule (SNUR; 40 CFR 721.5645) The approved uses are: precision and general cleaning, carrier fluid, displacement drying, printed circuit board cleaning, particulate removal, film cleaning, process medium, heat transfer fluid (dielectric and non-dielectric), and test fluid. Processors and users of this substance must also comply with the applicable general SNUR requirements set forth in 40 CFR 721 subpart A, including export notification requirements if applicable (40 CFR 721.20), and the applicable record keeping requirements set forth at 40 CFR 721.125.

**SARA 313 Regulated Chemicals:** Trans-dichloroethylene, Methanol

### State Regulations (U.S.)

**California Proposition 65:** This product contains chemicals known to the State of California to cause cancer and/or birth defects or other reproductive harm.

## 16. OTHER INFORMATION

### NPCA-HMIS Ratings:

Health - 2  
Flammability - 0  
Reactivity - 1

Personal Protective rating to be supplied by user depending on the conditions.

### FOR INDUSTRIAL USE ONLY

### REVISION DATE: MARCH 2015

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. Final determination of suitability of any material is the sole responsibility of the user.